



ENGINEERING
CONCEPTS, INC.

James River Bacteria Study Lynchburg Area Public Meeting

*City of Lynchburg, Bedford, Campbell and Amherst
Counties*

May 3, 2007



WHY ARE WE HERE?



- To share the results of a study on bacteria levels in Lynchburg's streams.
- To seek your feedback and comments
- To talk about what's being done and what needs to be done in order to improve water quality.



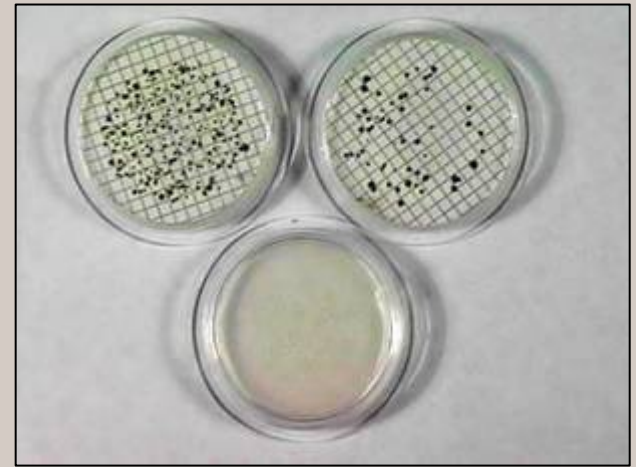
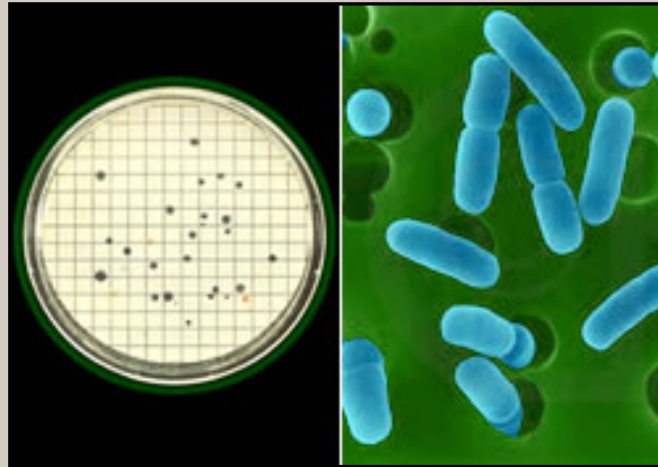
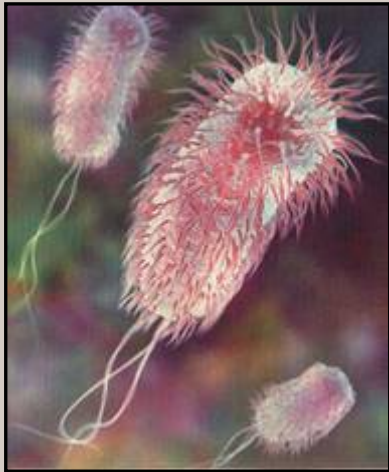
WHAT DOES DEQ DO?

- To work with communities to restore water quality!
- To provide information and resources!



THE WATER QUALITY ISSUE

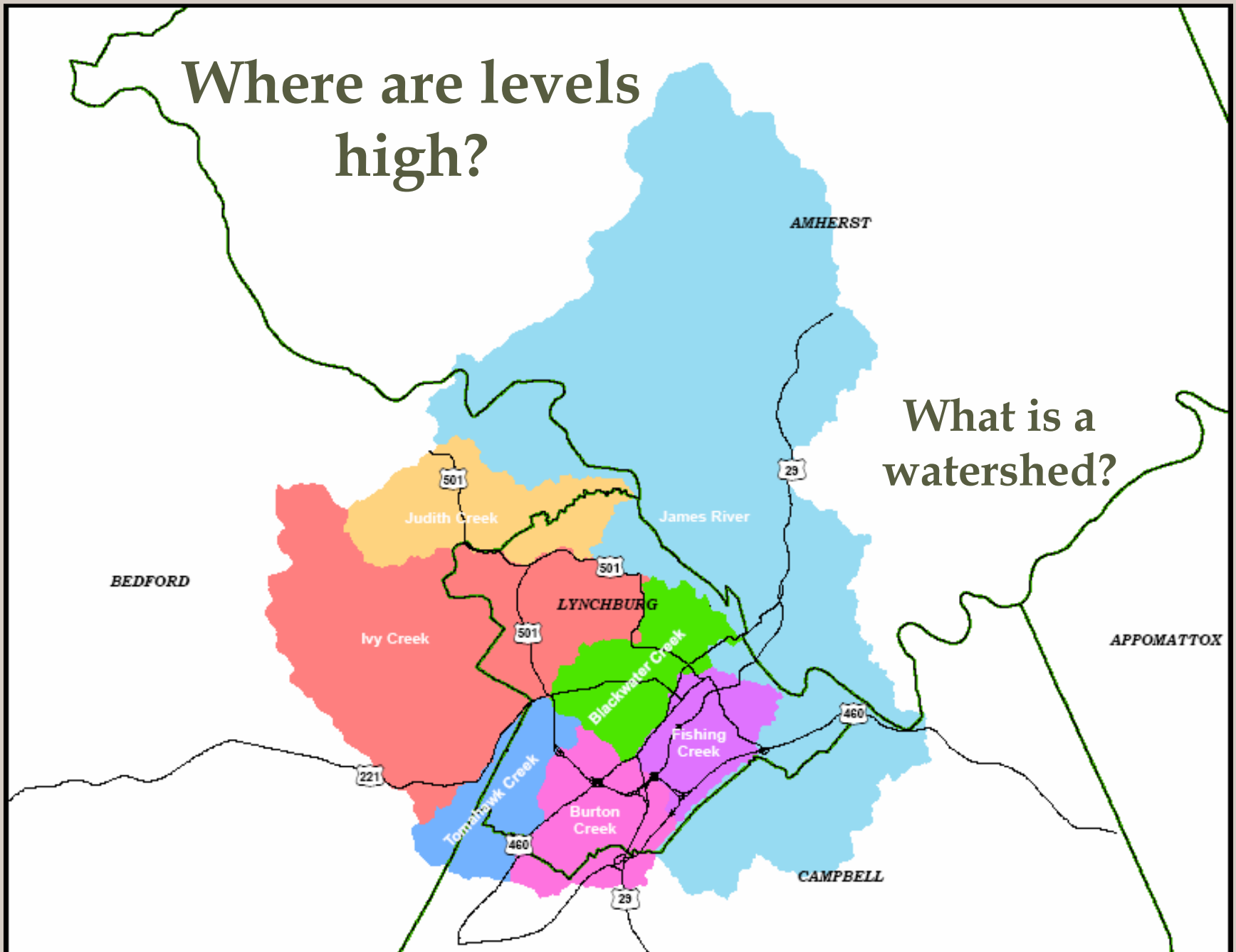
- Trigger for this study:
Elevated *E.coli* levels (> 10.5% of the time)



*Correlation between bacteria concentrations
and incidence of gastrointestinal illness*

Where are levels
high?

What is a
watershed?



HOW OFTEN ARE LEVELS HIGH?

Ivy Creek	15.8%	(19 samples)
Tomahawk Creek	22.2%	(9 samples)
James River	30.6%	(44 samples)
Fishing Creek	32%	(25 samples)
Judith Creek	33.3%	(9 samples)
Burton Creek	44.4%	(9 samples)
Blackwater Creek	62.5%	(16 samples)

THE WATER QUALITY ISSUE

If bacteria levels violate State Standards more than 10.5% of the time, then we do a special study. . .

A Total Maximum Daily Load Study



A TMDL is the amount of a particular pollutant that a stream can receive and still meet Water Quality Standards.

What is the max amount of bacteria that can be in streams and still meet standards?

This is the TMDL



By how much do we need to reduce bacteria levels in order to meet the TMDL?

TO ANSWER THESE QUESTIONS:

1. Form a Steering Committee.
2. Identify/quantify all sources of bacteria.
3. Develop a computer model that can calculate reductions needed from each source.



A LOT OF DATA GOES INTO THIS STUDY!

FIRST, FIND THE SOURCES

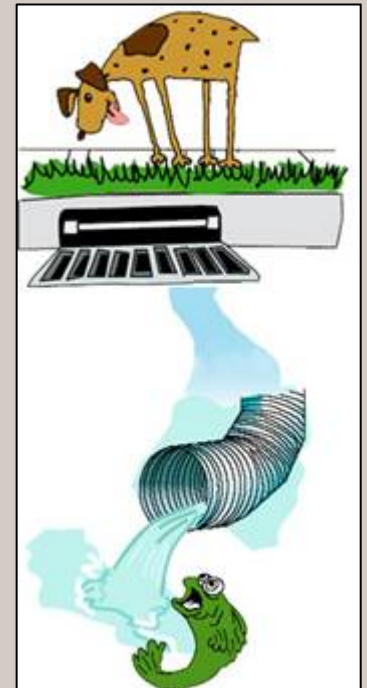
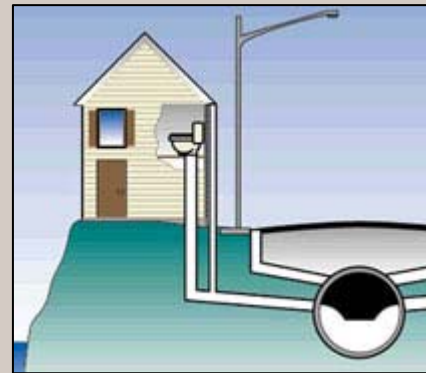
Where does this bacteria come from?

Humans

Livestock

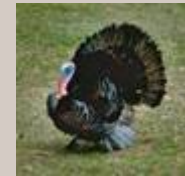
Pets

Wildlife



BACTERIA SOURCES

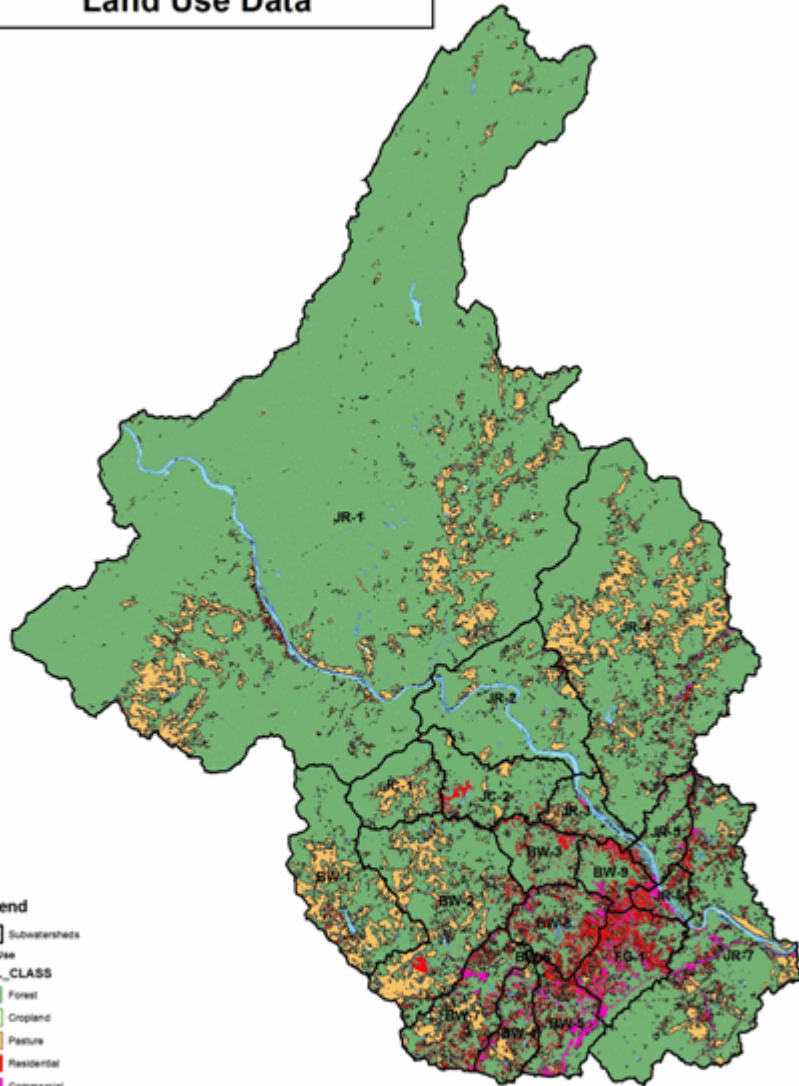
Potential Source	Population in Watershed
Beef Cattle (pairs)	1,729
Horses	218
Humans	25,326
Pets	10,893
Deer	3,278
Raccoon	2,801
Muskrat	2,777
Beaver	205
Wild Turkey	386
Duck	135
Goose	560



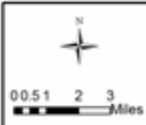
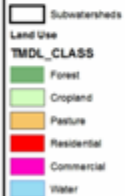
ALL POOP IS NOT EQUAL

Source	The Equivalent Number of Sources to One Beef Cow
Human	16.92
Pet	73.33
Horse	78.57
Beef Cattle	1.00
Dairy-Milked or dry Cow	1.31
Dairy-Heifer	2.85
Sheep	1.22
Deer	95.10
Raccoon	292.04
Muskrat	1,320.00
Beaver	165,000.00
Goose	41.30
Duck	13.58
Mallard	13.58
Wild Turkey	354.84
Hog	3.06
Chicken (Layer)	242.65

Lynchburg TMDL Project Land Use Data



Legend



LOCATIONS OF SOURCES

Land use type	Percentage
Commercial	1.3
Forest	76.6
Water/Wetland	1.3
Residential	8.4
Pasture	11.9
Cropland	0.5

THE REPORT

It's LONG! 381 pages



Seven Chapters

Intro, Watershed Characteristics, Bacteria Sources, Modeling, Reduction Scenarios, Implementation, Public Participation

You don't need a "beautiful mind"
to let us know what you think!



James River Subwatershed

Downtown Lynchburg

Southern Amherst County

Northern Campbell County

Northside of Rivermont Avenue

To get it off the “bad” list:



**100% Closure of
CSOs**



To Reach the TMDL



PLUS . . .

**80% Reduction
from HUMANS,
PETS, AND
LIVESTOCK/
PASTURE LAND**

Fishing Creek Subwatershed

Odd Fellows Road

Kemper Street

Fort Avenue

To get off of the bad list:

100% Removal of CSOs

To meet the TMDL:

**100% Removal of CSOs and
Straight Pipes**

**90% Removal of Livestock in
Streams**

**80% Reduction in
Urban/Residential Areas,
Cropland, Pasture**



To get it off of bad list:

**100% Removal of CSOs,
Straight Pipes, and Livestock
in Streams**

**75% Reduction from
Urban/Residential Areas and
Runoff from Pasture and
Cropland**

To meet TMDL:

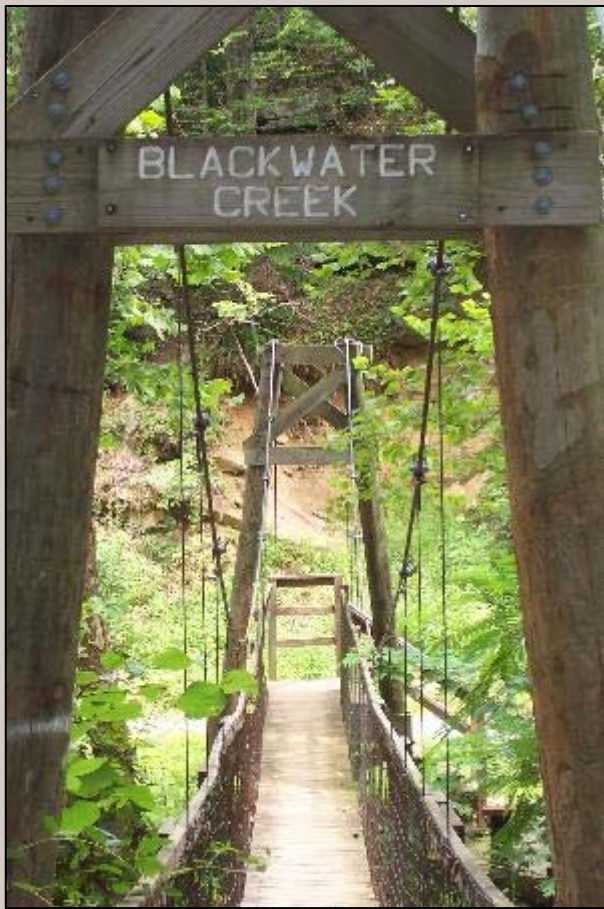
**100% Removal of CSOs and
Straight Pipes**

**98% Reduction from
Urban/Residential Areas,
Livestock in Streams, Runoff
from Pasture and Cropland**

Ivy Creek Subwatershed

Wiggington Road
Southside of Coffee Road
Link Road





Blackwater Creek Subwatershed

Lakeside Drive
Southside of Rivermont Avenue
Hollins Mill
Sandusky Drive



To get off bad list:

100% CSOs, Straight Pipes,
Livestock in Streams
75% Urban/Residential,
Pasture, Cropland

To meet TMDL:

100% CSOs and Straight Pipes
91% Urban/Residential, Livestock
in Streams, Cropland, Pasture

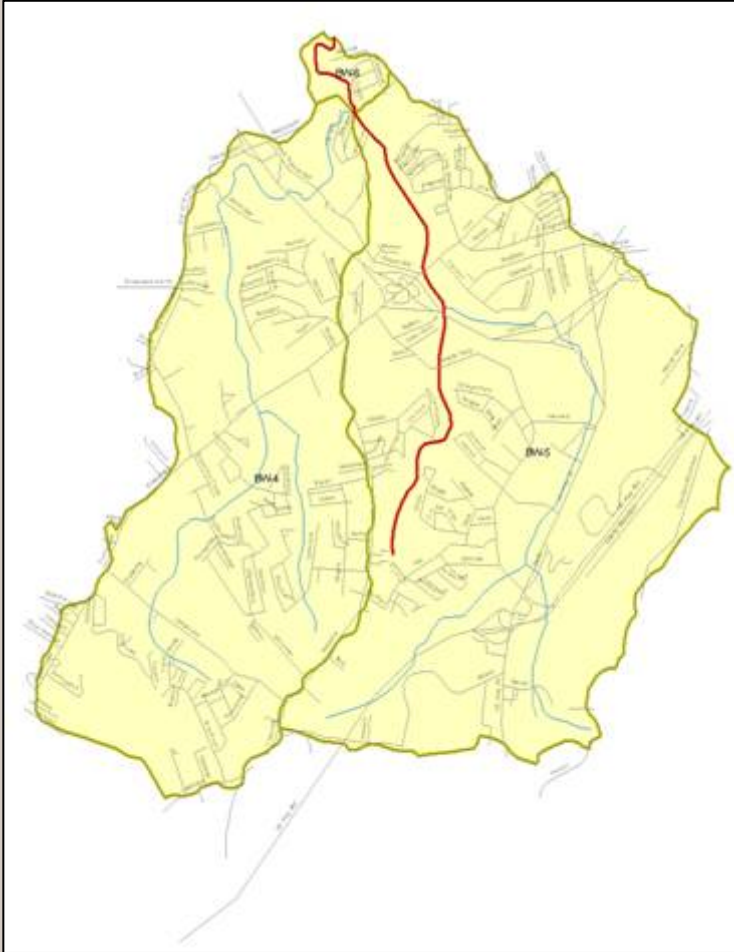
Burton Creek Subwatershed

Timberlake Road

Wards Road

Wards Ferry Road

Greenview Drive



To get off bad list:

100% Straight Pipes, Livestock in Streams

75% Urban/Residential, Cropland and Pasture

To meet TMDL:

100% Straight Pipes

98% Urban/Residential, Livestock in Stream, Cropland and Pasture

Tomahawk Creek Subwatershed

Waterlick Road
Laxton Road
Graves Mill Road



To get off bad list:

100% Straight Pipes, Livestock
in Stream

90% Urban/Residential,
Cropland and Pasture

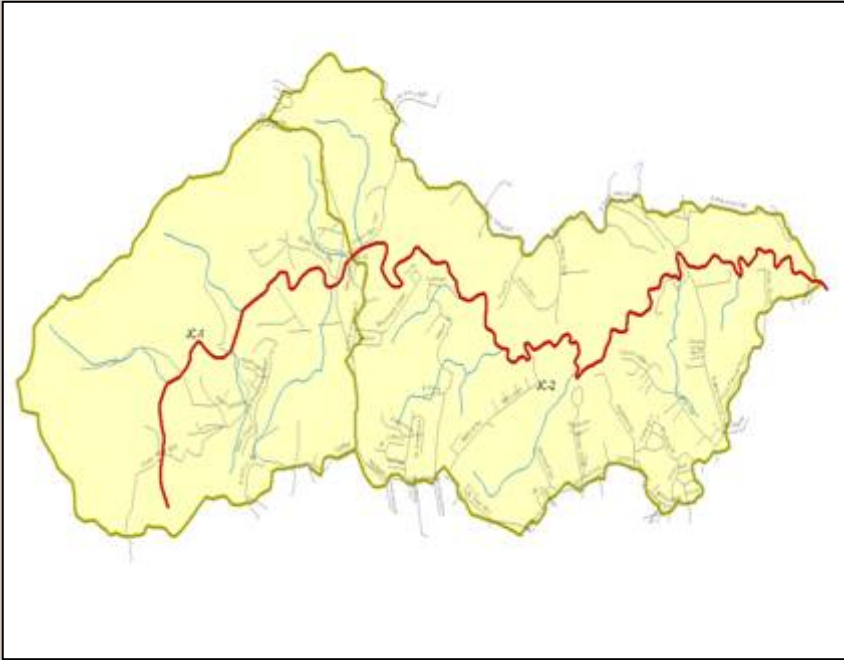
To Meet TMDL:

100% Straight Pipes

95% Urban/Residential,
Livestock in Stream, Cropland
and Pasture

Judith Creek Subwatershed

Trents Ferry Road
Northside of Coffee Road
501 North



To get off bad list:

100% Straight Pipes,
Livestock in Streams

50% Urban/Residential,
Cropland and Pasture

To meet TMDL:

100% Straight Pipes

94% Urban/Residential, Livestock in Stream,
Cropland and Pasture

HOW DO WE MAKE THESE REDUCTIONS?

Human Sources

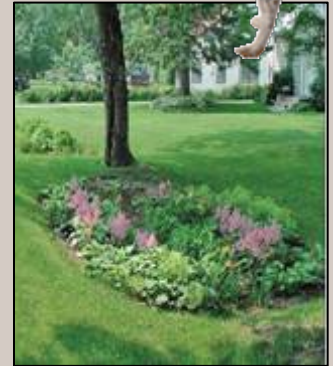
Septic tanks, straight pipes, CSOs, rainleader disconnection

Pet Sources

Pick up the poop, composters, rain gardens

Livestock Sources

Best Management Practices (BMPs), buffers



PROTECTING OUR WATERS

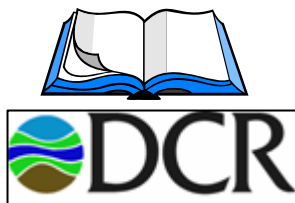
- Your own backyard
- Beyond your own backyard
 - Adopt-a-Stream
 - Water quality monitoring
 - Be part of the planning process



WHAT CAN GOV'T DO TO HELP?

We are here

Implementation Plan



Monitoring

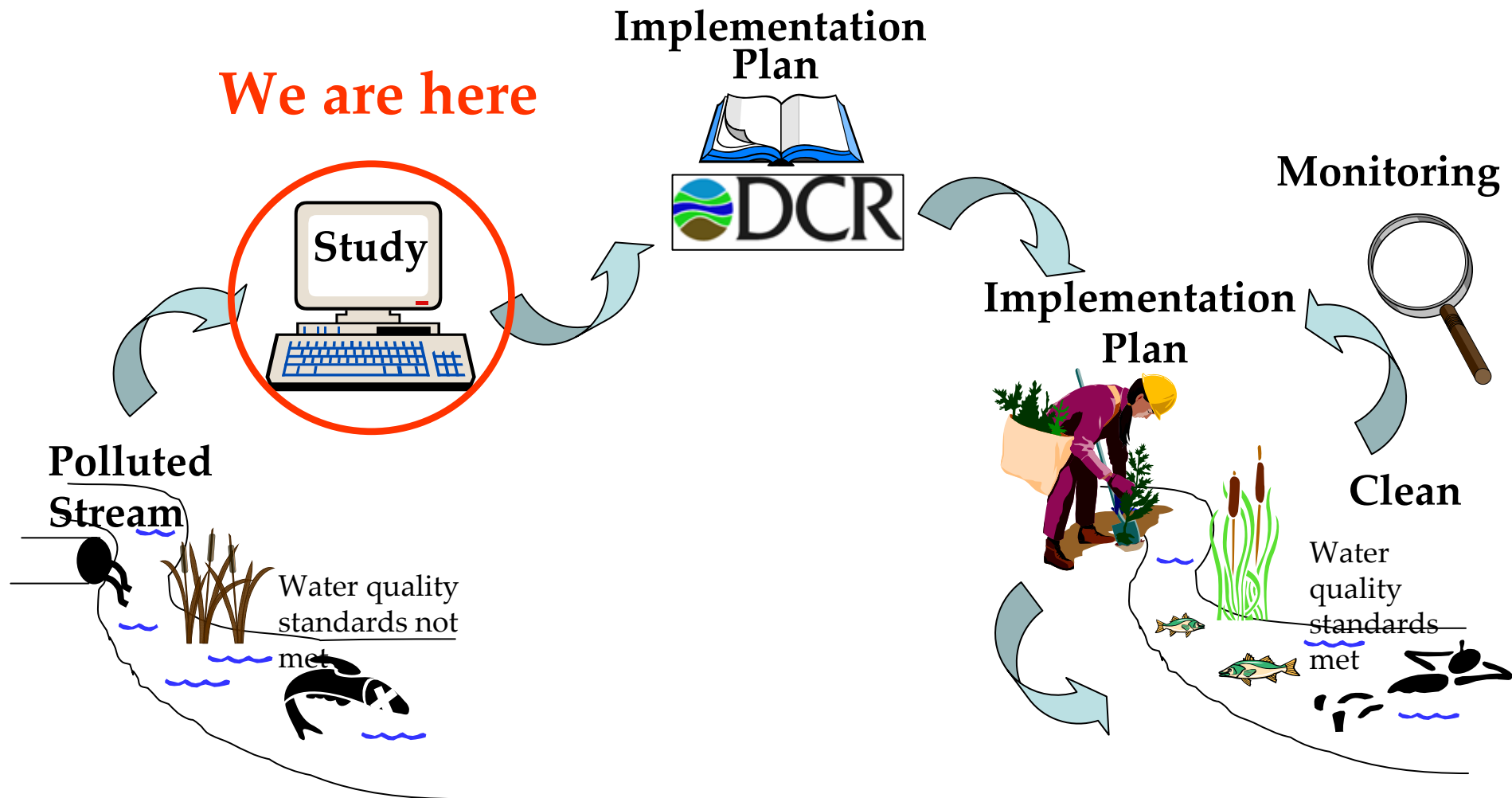
Implementation Plan

Clean

Polluted Stream

Water quality standards not met

Water quality standards met



Submit your comments by June 4, 2007 to:

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